Watershed Analysis Manual

Introduction

This manual is designed to provide a step-by-step approach for performing watershed analysis. The manual includes steps which are required, as well as suggestions that may improve the watershed analysis process. It leads the members of the team through the steps to create the resource assessment for a watershed, define problems and sensitivities, produce management prescriptions, and monitor effectiveness. Individuals leading and/or participating in a watershed analysis should be familiar with the appropriate rules and regulations (WAC 222-22) in addition to the information contained in this manual.

The process includes assessments of current and potential watershed and resource conditions by resource specialists. Assessments identify existing and potential hazards and their relationship to resource vulnerabilities. Subsequently, the field managers team develops prescriptions based on information generated in the resource assessment. (Figure 1 indicates the general steps involved in the watershed analysis process, and Table 1 provides an overview of the specific steps.)

Process Overview

Start-up

Watershed analysis begins with start-up. Whether the watershed analysis is initiated by the DNR or by a private landowner, identification of all landowners in the WAU is a key starting point. The maps, photographs and available data are collected, the working teams are formed, responsibilities are defined, and required notifications are distributed. The resource assessment team then develops a plan for performing the required evaluations of the watershed.

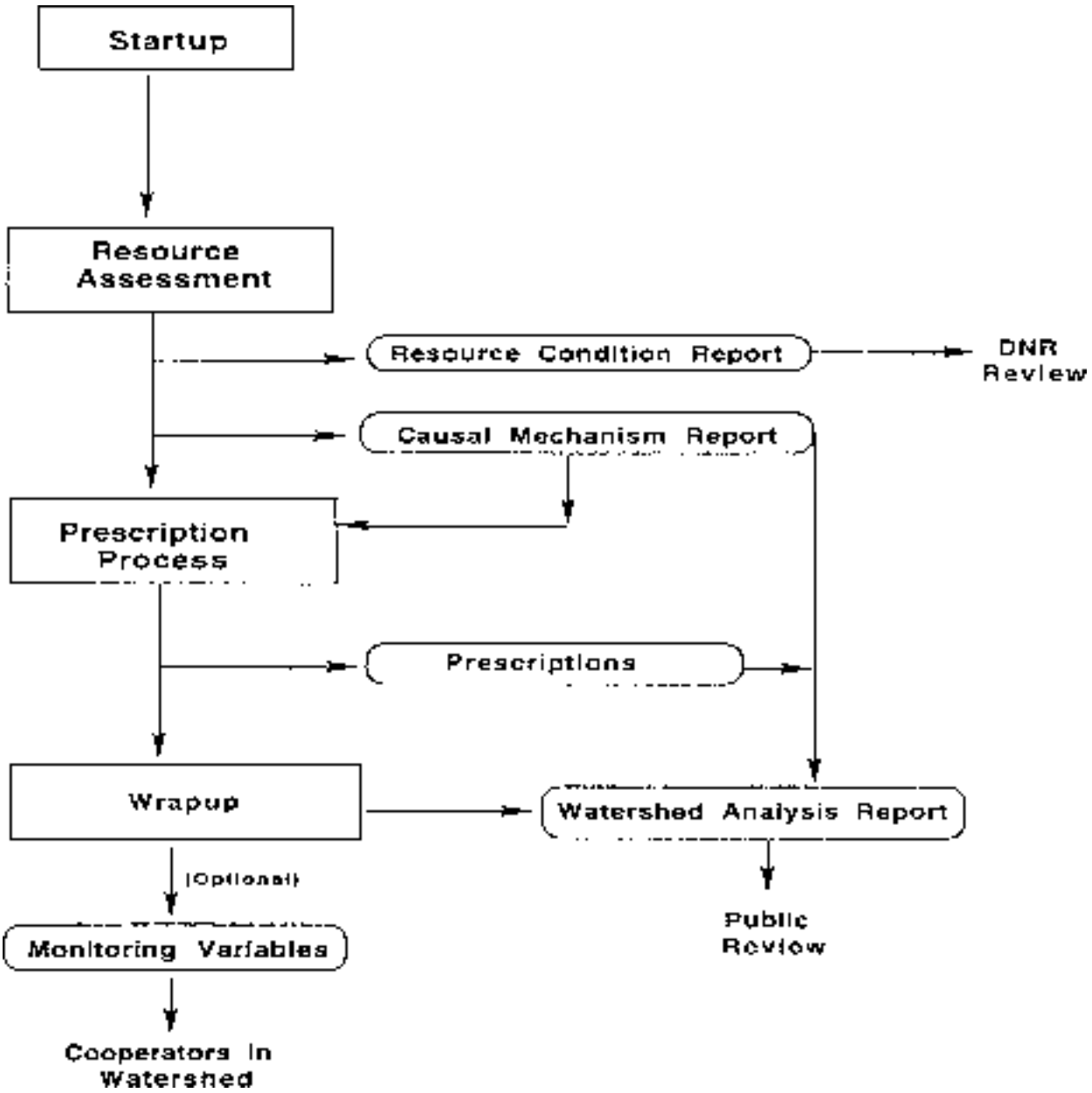
Prior to actual start-up, it can be useful to call an initial "scoping" meeting for landowners and other interested parties so that they may understand what water-

shed analysis entails and the team may determine the landowner's abilities to participate and provide helpful input.

Resource Assessment

Once underway, the scientific team follows a two-phase process for performing resource assessment. In the inventory phase, data is gathered and interpreted for individual watershed processes and resources, with analysts working relatively independently from one another. In the synthesis stage, the analysts work together to develop a watershed scale perspective of cause and effect linkages between hillslope and stream processes. They identify resource sensitivity areas requiring additional prescriptions reported in the causal mechanism report.

FIGURE 1. Watershed Analysis Team Process Steps



Prescription Process

Based on the findings of the resource assessment compiled in the causal mechanism report, a field managers team made up of managers and analysts determines the required or voluntary forest practices for each identified area of resource sensitivity. For each area, the team should prescribe one or more practices or strategies that are likely to avoid, prevent, or minimize problems. When necessary, managers and resource specialists should visit the sensitive areas. Voluntary enhancement opportunities can be noted at this point. Problems associated with non-forest practice related activities are referred through the DNR to the appropriate agency. Prescriptions are reviewed with the resource assessment team to assure that the correct resource sensitivities are addressed and are included in the watershed analysis report.

Final Steps

Report

Watershed analysis for the WAU is completed when the team produces the watershed analysis report. Prescriptions are attached to each resource sensitivity identified in the causal mechanism report. The proposed monitoring plan is also attached.

Review

The team leader must also complete the environmental checklist, as required under the State Environmental Policy Act (SEPA).

The full report and checklist is forwarded to the responsible official (DNR Resource Protection and Service Assistant Regional Manager) for Threshold Determination.

The DNR will coordinate review as specified in WAC 222-22-080.

Wrap-up

Once the watershed analysis is completed, the entire watershed analysis team may perform one last task. The group may select appropriate monitoring variables and protocols to measure the effectiveness of the prescriptions and resource response. These will depend on (1) the findings of the watershed analysis, (2) the variables that are likely to be most useful for determining whether long-term resource goals are met, and (3) the financial and personnel resources available. Two steps are useful: a prognosis step, in which the team hypothesizes their expectation of likely future conditions, given management prescriptions; and a monitoring selection step, in

which specific characteristics are selected for tracking whether those expectations are met.

Forms and Worksheets

Various data forms and worksheets are provided in the manual to assist the assessment team and field managers team. Use of these forms is encouraged in that they provide some tracking and accountability to the data gathering and interpretation. It is expected that these forms can be used in place of lengthy written documents, encouraging the team to spend time writing only where judgment or deviations from methods are used and brief narratives are useful. The use of forms and worksheets will need to be flexible, especially for Level 2. Analysts may be using different methods than those for which the forms were designed.

It is recommended that some narrative be included in the final report for the benefit of land managers and others who become involved with the watershed several years after the original analysis is completed.

Table 1. Overview of the Specific Steps of Watershed Analysis.

1. Startup
   Identify leader(s). An overall project manager is recommended in addition to the required team leaders.

   - Identify and notify landowners in the WAU.
   - Notify affected Indian tribes, county and city governments in the WAU, and the public (prior to starting the analysis).
   - Hold a "scoping" meeting, if desired.
   - Appoint qualified individuals to perform assessments and fill team roles.
   - Notify DNR of intent to start watershed analysis (as set forth in WAC 222-22-040(3)); the analysis may begin within thirty (30) days after this notification is received by the DNR.
   - Gather starting information (maps, aerial photographs, management history).
   - Schedule first meeting.
     - Develop team schedule and responsibility list.

- Develop plan for common sampling and coordination of fieldwork.

2. Resource Assessment
   - Qualified analysts (Level 1) or specialists (Level 2) implement inventory modules of resource assessment.
   - Team meets (preferably with field managers present) to perform synthesis of watershed information gathered in inventory.
   - Team completes causal mechanism report for identified watershed sensitivities and resource condition reports describing watershed conditions.
   - Team makes recommendations on indeterminates and the need for Level 2 if appropriate.
   - Schedule hand-off of resource assessment to field managers.
   - Schedule Level 2 if necessary (can occur immediately or at a later time).
   - Circulate the products (including supplying copies to the DNR region when the assessment is completed).
   - If no consensus see WAC 222-22-050(3), -060(4).

3. Prescription Process
   - Convene field managers team (managers, engineers, and analysts as needed).
   - Develop prescriptions for each identified resource sensitivity.
   - Attach prescriptions to causal mechanism report.
   - Review with the assessment team (recommended).
   - Complete compilation of watershed analysis report.
   - Complete the environment (SEPA) checklist.
   - Forward the report to the responsible official (DNR Resource Protection and Service Assistant Regional Manager).

4. Wrap-up
   - Reconvene resource analysts and managers.
   - Develop prognosis for watershed considering current conditions and hypothesized condition given management prescriptions.

- May recommend monitoring program considering useful measures and financial resources.

- Pass on to watershed stakeholders.